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ACCURATE REGISTRATION FOR CENTRIC RELATION

JOHN B. LA DUE, D.D.S.
Chicago

IN THE construction of artificial dentures the most significant step is the correct location of centric relation of the jaws, one to the other. Centric relation is the position from which all excentric movements of the mandible emanate and is the position in which function ceases. Centric relation converted into central occlusion is that position where there is maximum contact of the occlusal surfaces of the teeth. The surfaces of teeth that are in contact are out of function.

Virtually every factor of denture construction is controversial. The one theory about which there is more general agreement is that the apex of the gothic arch tracing is the position that locates the correct centric relation of the mandible to the maxilla. Many operators regard this as a specific measure.

Doctor Gysi to whom gratitude is due, promulgated this idea. To Doctor Charles Siddall we are indebted for a method of registering the gothic arch tracing in a manner that is clear and concise with the least possibility of error. The scheme is comparatively simple and can be checked for precision.

1. After the impression of the jaws are taken and suitable casts are made, the next step is to make the occlusal rims, commonly called bite plates, preparatory to making the registration for centric relation.

The upper occlusal rim is constructed by adapting a sandarac base to the cast and molding a rim of modeling compound upon the base. The lower occlusal rim is formed entirely of modeling compound.

With the patient in the chair, trim the upper occlusal rim to the length and position desired for the length and position of the upper anterior teeth. The lower occlusal rim is trimmed to the height that conforms with the esthetic vertical dimension (Fig. 1).

2. Having established the correct dimension, the Siddall registration plates are attached to the occlusal rims. The upper plate has a series of holes drilled and threaded, one of which is to receive a screw that is to act as the registration instrument. The lower is a plain steel plate (Fig. 2). Place the upper occlusal rim on the upper cast so that it will not be distorted. Grasp the upper steel plate with a pair of strong pliers and heat in a flame until hot enough to embed it into the surface of the compound rim to the depth of one-eighth inch.

3. Repeat the process, attaching the lower plate to the lower rim in a similar manner.

4. On the lower plate is smeared black carding wax, in which the gothic arch tracing is to be made.

5. The rims are then placed in the patient's mouth and the central screw in the upper plate is so adjusted that it will come into contact with the lower plate at the same time that the occlusal rims come together. The small mark on the carding wax on the lower plate will prove this condition. The central bearing screw will maintain the vertical dimension and the compound can then be trimmed away on the lower rim down to the steel plate (Fig. 3).

6. Replace the occlusal rims back in the patient's mouth and instruct the patient to bring the central bearing point into contact and to move the mandible in all directions. The central bearing screw, moving upon the lower registration plate, will produce a gothic arch tracing in the carding wax smeared upon the plate (Fig. 4). The apex of this gothic arch locates centric relation of the mandible to the maxilla.

7. Fig. 5 shows a small tray, upon the surface of which is placed a quantity of low-fusing compound. With the occlusal rims in the mouth, the patient is instructed to retrude the mandible as far as possible. This tray with the compound heated to a fusing point is slipped in between the occlusal rims, thus sealing them together (Fig. 6).

8. Chill quickly and remove from the mouth.

9. Remove the lower occlusal rim from the registration, and over the central bearing point, place a piece of carbon paper (Fig. 7).

10. Reassemble the registration, and the pressure of the central bearing point on the carbon paper will mark the position of the central bearing point when the occlusal rims were sealed together. To be correctly located the carbon marking must be in the apex of the gothic arch tracing (Fig. 8).

11. If this check shows out of the apex, centric relation has not been

Fig. 1—Occlusal rims trimmed to conform to proper vertical dimension.

Fig. 2—A, upper registration plate.

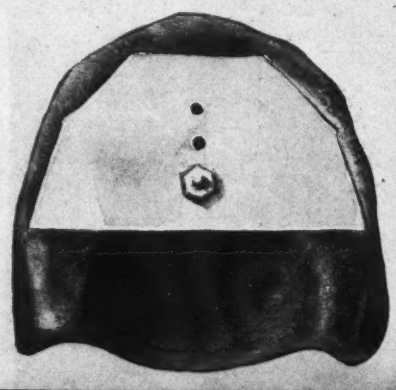


Fig. 2—B, lower registration plate applied to rims.

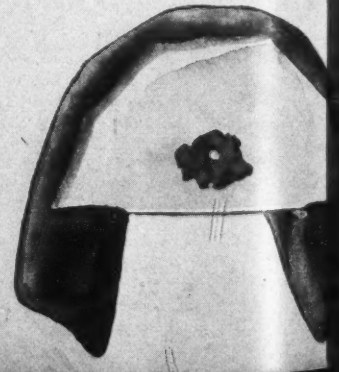


Fig. 3—Central bearing screw maintaining vertical dimension.

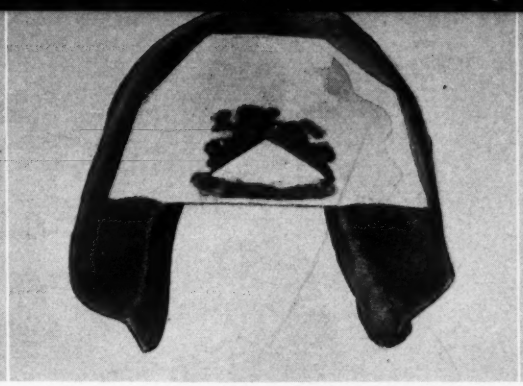


Fig. 4—Central bearing screw producing a gothic arch tracing in the carding wax on the plate.

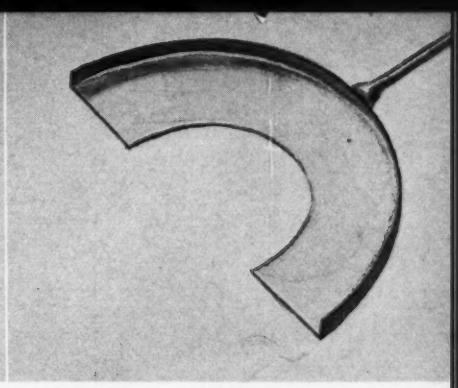


Fig. 5—Low-fusing compound on small tray.

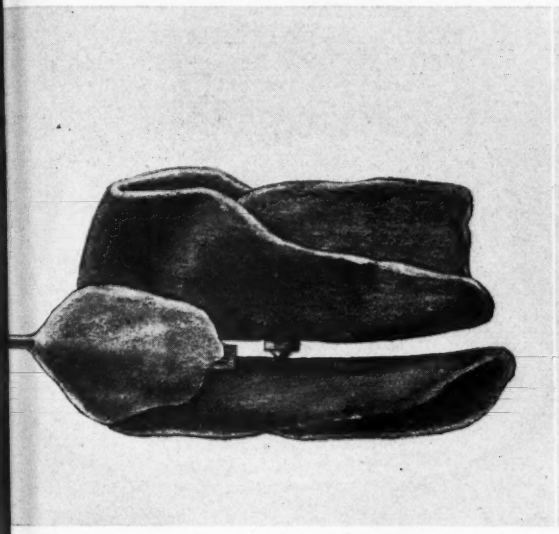


Fig. 6—Tray and compound shown in Fig. 5 slipped in between occlusal rims to seal them together.

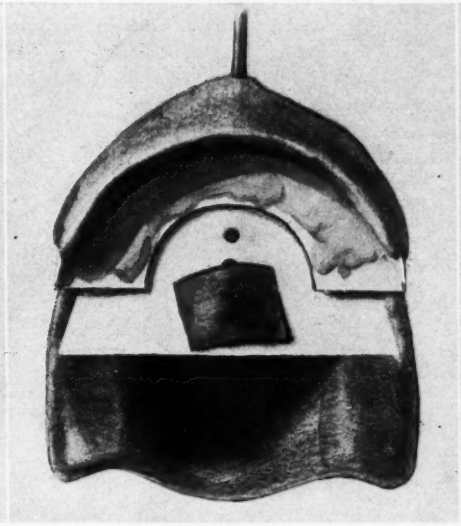


Fig. 7—Carbon paper placed over central bearing point of lower occlusal rim.

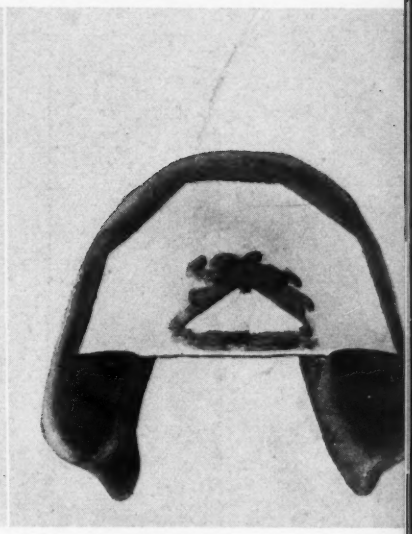


Fig. 8—Correct location of carbon marking in apex of gothic arch tracing.

established. In order to correct this, the tray with the low-fusing compound is reheated and the rims sealed together again. This is a positive means of proving the accuracy of the registration.

When the registration for centric relation has been proved to be correct, the several parts are waxed securely together; the casts are placed in the occlusal rims (Fig. 9), and mounted on the articulator.

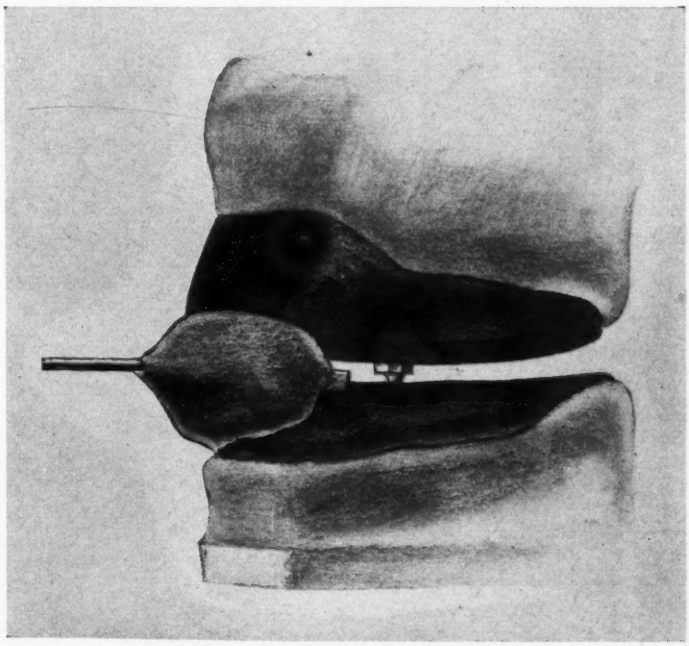


Fig. 9—Casts placed in occlusal rims after waxing.

25 East Washington Street.

ACQUIRED MICROSTOMIA: REPORT OF A CASE

JOSEPH E. SCHAEFER, M.D., D.D.S.
Chicago

History—The patient, a woman, was burned with lye, when a child, which caused cicatrices at both angles of the mouth. This did not inconvenience her until the question arose of the removal of her teeth and the construction of dentures. The orifice of the mouth was too small for the insertion of trays for taking the impression or the insertion of the finished dentures. The patient was referred to me for a stomatoplasty (Figs. 1 and 2).

Stomatoplasty—A triangle of skin was removed from each angle of the mouth, with the base of the triangle at the lip side and the apex in the cheek. An incision through the center

Fig. 1—Mouth open. Note small orifice.

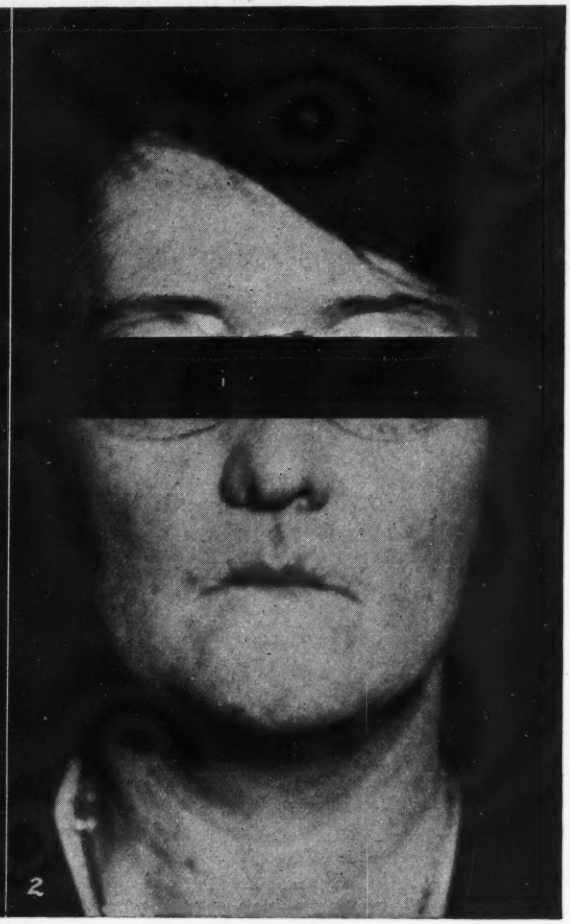


Fig. 2—Mouth in repose.

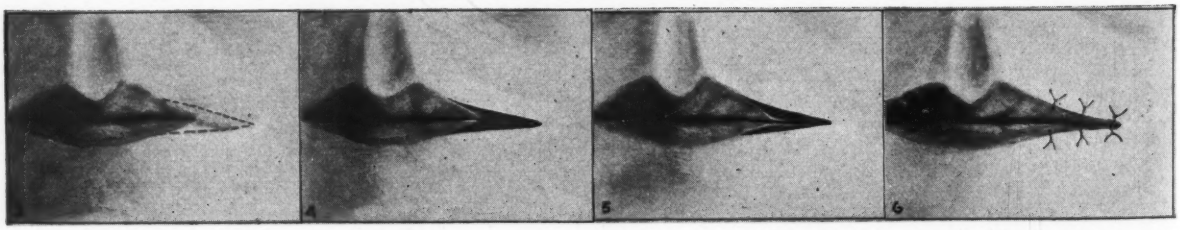


Fig. 3—Incised skin.
Fig. 4—Split mucous membrane in center of triangle of incised skin.
Fig. 5—Enlarged orifice.

Fig. 6—Mucous membrane of inside of mouth sutured over sides of triangle of incised skin.

Fig. 7—Mouth open. Note increase in size of orifice.
Fig. 8—Mouth in repose without denture after plastic procedure.
Note normal appearance.
Fig. 9—Appearance with dentures in place.

of the triangle was then made and the mucous membrane of the inside of the mouth was sutured over the sides of the triangle of the incised skin (Figs. 3, 4, 5, and 6).

Sectional Impression for Denture Construction—After the orifice was enlarged sufficiently (Figs. 7 and 8), so that a denture could be inserted, it was still too small to insert the dental impression trays. I suggested to the dentist that the impression be taken sectionally in modeling compound. This was done, and satisfactory dentures were constructed (Fig. 9).

COMMENT

One of the basic reasons for plastic procedures is the psychologic effect on the patient. Persons who have facial deformities are often extremely sensitive about them; this tends to make the person retire within his personality as a defense mechanism against the critical eye of associates. Since this correction was made, the patient married and moved to Canada.

55 East Washington Street.

A. D. A. EDUCATIONAL MATERIAL

Two recent publications issued by the American Dental Association are now available to members of the Association. One is a sixteen-page booklet on the care of the teeth during the prenatal period, which explains simply and clearly why the expectant mother should care for her own teeth and what she may do to insure better teeth for her child. It has been prepared by the Bureau of Public Relations and approved by the American Dental Association and the United States Public Health Service. Single copies may be purchased for five cents each or twenty-five for one dollar.

The other publication ready for distribution at this time is the Enamel Fissure Decay Chart. It has been prepared from drawings by Doctor Charles F. Bodecker of Columbia University and is a four color 9 by 16 inch pyraglass chart which will aid the dentist in explaining the condition of the teeth to patients. The price is thirty cents.

Both the pamphlet and chart can be obtained from the Bureau of Public Relations, American Dental Association, 212 East Superior Street, Chicago, Illinois.

THE RESTORATION OF THE FRACTURED VITAL INCISOR

H. SPALDING BOTH, D.D.S.
New York

THE upper incisors are subjected to external violence more than any other teeth. Our present stage of civilization with its automobile accidents and athletic activities account for most of these fractures. These accidents occur mostly in children and young persons between the ages of 8 and 25. The older the person is the more optimistically may we approach the restoration. I emphasize this point because the first concern must be the preservation of tooth vitality. Everything else is secondary.

The likelihood of incisor fractures is in direct ratio to the labio-palatal thickness or diameter, especially at or near the incisal edge. The strength and labio-palatal thickness of cuspids make them less subject to accidental trauma than centrals or laterals. The thin narrow long incisors with translucent and corrugated incisal edges are the most apt to fracture and the most difficult to restore.

The operator should not undertake a restoration until he has clearly visualized exactly what his method of treatment will be. Roentgenograms should be taken to ascertain the exact size, shape, and cornua of the pulp, and thickness of the enamel. A study model should be made, and all excursions of the mandible carefully examined. Only after all these factors have been accumulated into a comprehensive picture is the operator in a position to plan the treatment and restoration. It is advisable to outline the cavity preparation on the study model.

In the exceptionally thin incisors where the fracture is not too great, either along the incisal edge or approximately, it is often possible to obtain gratifying results by judicious grinding and orthodontia; the technique is briefly described (Fig. 1) under the following heading, number 1.

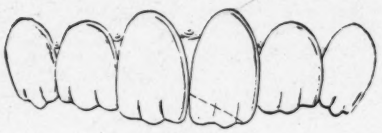


Fig. 1

Fig. 1—The thin translucent incisor with corrugated incisal edges. If the fracture is disto-incisally, this form of treatment (grinding) is even more favorable.

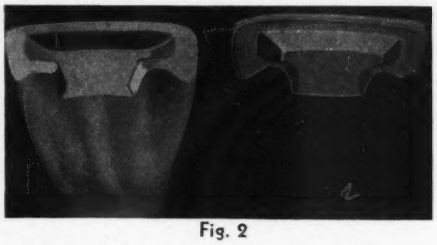
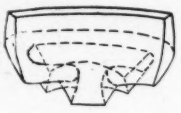


Fig. 2

Fig. 2—Method of correction of a fracture along the incisal edge, frequently occurring in athletics, such as being hit by a tennis racket.



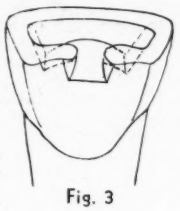


Fig. 3

Fig. 3—Inclined planes mesial and distal to the pulp; strengthened porcelain bulk on the palatal surface.

Fig. 4—Porcelain inlay in position showing retentive area. This inlay cannot be removed in the line of stress even though not cemented.

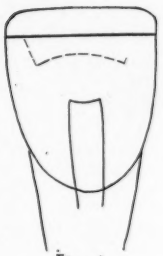


Fig. 4

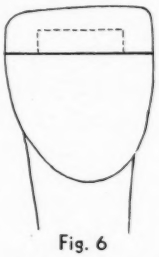


Fig. 6

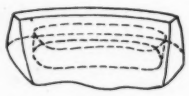


Fig. 5

Fig. 5—Here the dentine forms the retentive area, thus creating a partial shoulder veneer crown. Shaded area on dentine depicts depressed dentine.

Fig. 6—Partial shoulder veneer crown in position.

Fig. 7—Diagram of the fractured tooth as seen at the first visit. The shaded triangular area represent the exposed dentine.

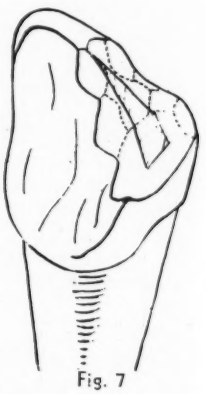
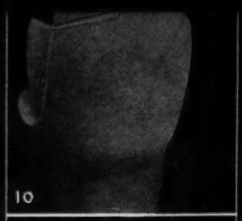
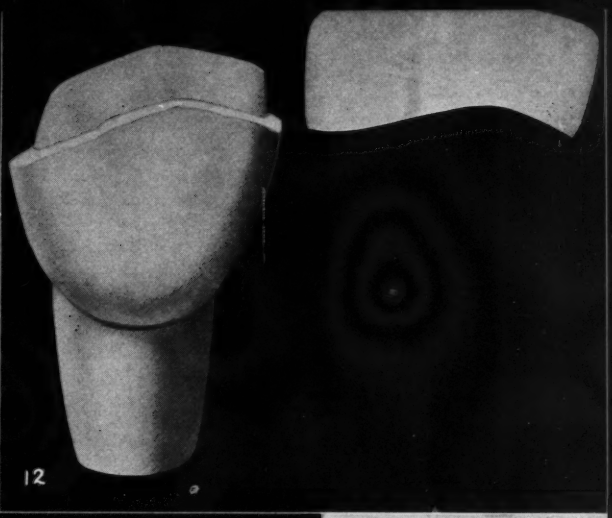


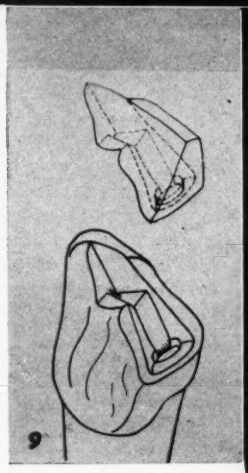
Fig. 7

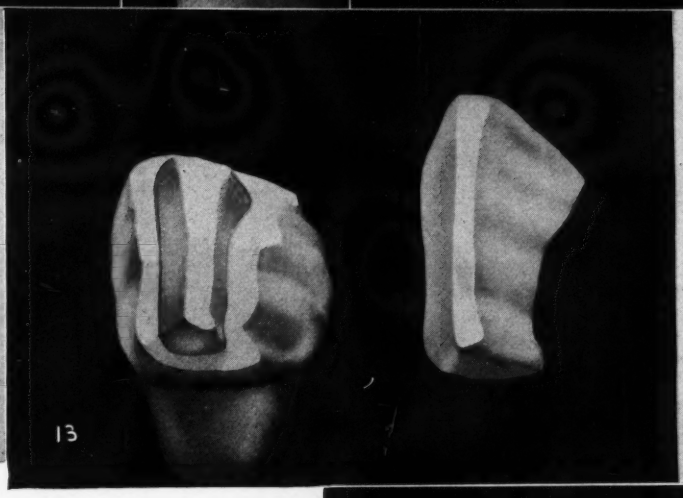
Types of Fractures and Methods of Restoration

1. Frequently, in the case of a young girl, for example, an excellent result may be obtained by grinding off the corrugations along the incisal edges of all the other incisors and thereby shortening all the other incisors slightly; then, the patient may be referred to a competent orthodontist who may move the injured tooth slightly out of the socket with a small orthodontic appliance. If, during this procedure, the affected tooth should come into traumatic occlusion, because the thicker palatal surface is in closer proximity to the opposing incisal edges, the palatal surface should immediately be made thinner and the opposing incisors shortened slightly. In this type of restoration no actual









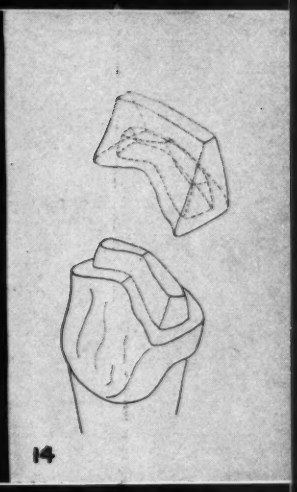


Fig. 8—Preparation of the approximo-incisal inlay for the fracture in Fig. 7. Note thickness of porcelain on palatal surface and substantial retention.

Fig. 9—Construction of preparation and restoration.

Fig. 10 — Labial view. The inlay is retained by healthy dentine and retained on a principal somewhat similar to that of a Steele's facing cemented to its backing. Note inclination of incisal dentine.

Fig. 11—Note right angle margins and flat floor. The inlay can only be dislodged if broken.

Fig. 12—Labial view of mesio-inciso-distal preparation and restoration.

Fig. 13—Incisal view of mesio-inciso-distal preparation and restoration. One approximal shoulder does not show.

Fig. 14—Preparation and restoration from palato-approximal aspect.

Fig. 15—A serious fracture in a person between the ages of 8 to 10 years. No preparation is feasible with the possible exception of a slight thinning of the palatal enamel gingivally to the line of fracture with a wet stone, so as to prevent traumatic occlusion.

restoration is made, and, therefore, no further tooth structure is lost.

2. All porcelain inlays that involve the cutting edge must be shaped so that they cannot be dislodged during functional stress. A fracture along the incisal edge is restored as follows (Fig. 2):

(a) The enamel walls are ground to sharp right angles to the cavosurface angles, and to withstand the strain of incision; the palatal wall is made shorter than the labial.

(b) The dentine is then prepared with a straight fissure bur to create a flat floor and perpendicular wall.

(c) The extreme corners of the floor are deepened for additional retention; inclined planes are thus formed laterally to the pulp (Fig. 3).

(d) The palatal enamel in the center of the palatal surface is removed with a stone; this gives additional strength and thickness to the porcelain inlay without further pulp encroachment (Fig. 4).

Another method of incisal edge restoration is to remove more enamel and leave the dentine stand; then,

(*Continued on page* 391)

THE COMBINATION DIE

CARL J. GRAVER, D.D.S.
Cleveland

THE amalgam die, as it is now made, is expensive because of the rise in the cost of silver. I am, therefore, presenting a technique for model alloy which I have been using with a saving of from 60 to 70 per cent and which produces a more accurate model or die than the amalgam die generally used.

The technique to be described calls for the combination of alloy and model stone. By using the stone for the root portion of the die the saving in cost is made possible, and because of the physical properties of each ingredient the greater accuracy is attained. The expansion of from 0.05 to 0.20 per cent in the stone reduces the shrinkage in the alloy, thus resulting in a more accurate die than if only alloy were used.

Technique

1. With the cavity properly prepared, a copper band compound impression is taken, well down at the cervical margin and over the tooth.

2. When removed, all the excess is trimmed (Fig. 1).

3. The amount of alloy to be used depends on the size of the tooth. The proportions of alloy used are 5 parts alloy to 8 parts mercury on the Crandall Balance or any other measuring device that will give the same proportions. The ingredients are mixed for two minutes in the mortar and one minute in the hand. For the average die, I use 10 parts alloy to 16 parts mercury.

4. The impression is now packed by placing the amalgam in the impression and with a medium plugger packing it down and tapping slightly on the bench.

5. Then, with a fine plugger the amalgam is drawn to cover the sides of the impression until a shell is formed as shown in Figs. 2 and 3. All the surfaces of the compound should be covered with a reasonable thickness of alloy.

6. The impression is now wrapped in wax as shown in Fig. 4, and is ready for the stone.

7. The stone is mixed to a heavy consistency and vibrated into the band. With a slight tapping the band is filled. The stone is poured immediately after the amalgam is packed. The setting stone produces a slight expansion to compensate for the contracting alloy.

8. Allow the impression with the stone to set; then separate and trim.

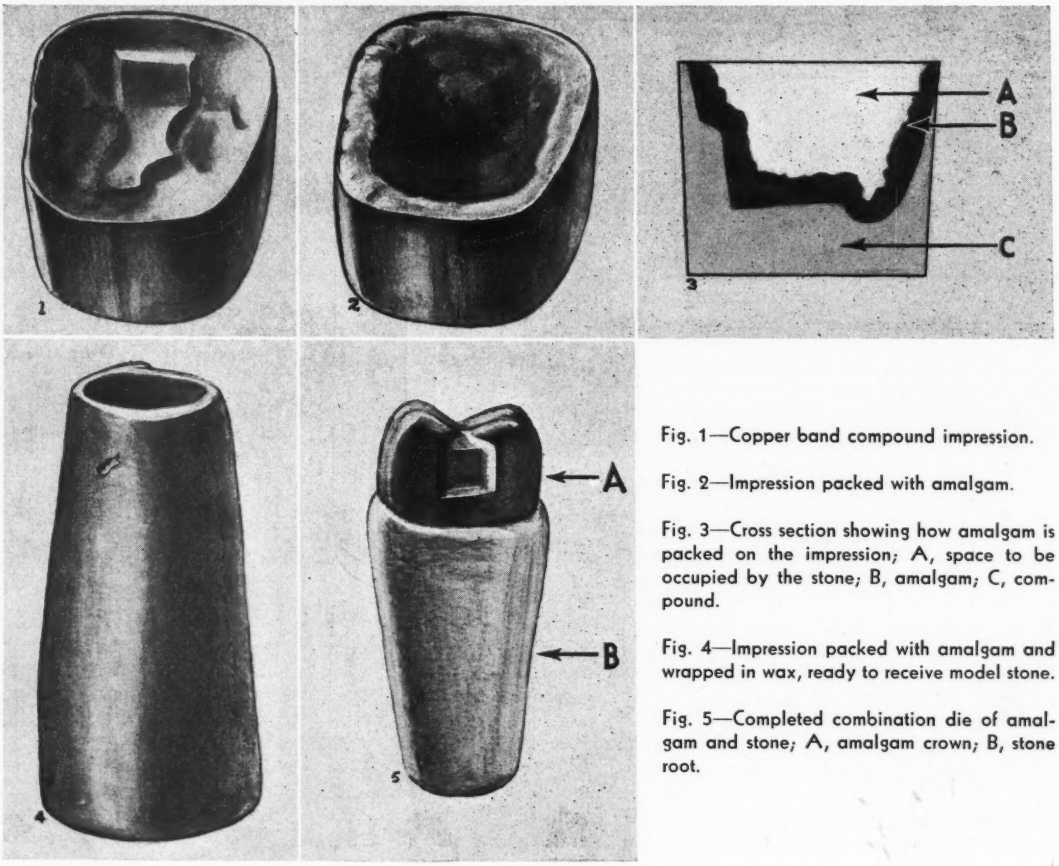


Fig. 1—Copper band compound impression.

Fig. 2—Impression packed with amalgam.

Fig. 3—Cross section showing how amalgam is packed on the impression; A, space to be occupied by the stone; B, amalgam; C, compound.

Fig. 4—Impression packed with amalgam and wrapped in wax, ready to receive model stone.

Fig. 5—Completed combination die of amalgam and stone; A, amalgam crown; B, stone root.

ADVANTAGES

1. The finished die (Fig. 5) will stand moderate swedging. I had occasion to swedge an inlay on a die of this type. This was accomplished without breakage; however, the usual amount of force was not exerted.

10616 Euclid Avenue.

2. The die is easy to handle because of the long root end.

3. This method is reasonably accurate. I have noticed no distortion in any of the dies that I have made. I checked the technique for accuracy by making three dies from one model and making an inlay which I fitted to each die. The inlay went to place nicely on each.

4. The large combination die affords a saving of approximately 70 per cent alloy and is especially economical for models of molars, three-quarter crowns, and porcelain jacket dies.

THE RESTORATION OF THE FRACTURED VITAL INCISOR

(*Continued from page* 389)

cut a well-defined shoulder in the enamel with a small wheel-shaped stone. The result will be a partial shoulder jacket crown (Fig. 5). This type of inlay is not so retentive as the former (Fig. 6).

3. If the incisor is fractured approximately as well as incisally, the problem of sufficient retention presents itself more vividly and with additional complications (Fig. 7). It should be borne in mind that all porcelain inlays that involve the cutting edge must be so shaped that they cannot be dislodged during functional stress, particularly in a mesiodistal direction; moreover, the porcelain restoration must be bulkier and thicker than metal, otherwise it will fracture through its weakest and thinnest portion. To meet these requirements, a deepened recess is cut in the gingival floor with a number 700 fissure bur (Fig. 8) which will form a wide stubby and short but strong porcelain dowel in the finished inlay. A similar recess is cut in the incisal step, also short and stubby and as far removed from the pulp as possible. These little pyramid-shaped depressions in addition to the inclined plane make functional dislodgment impossible (Fig. 9).

4. Another type of restoration which preserves all the protective dentine is shown in Figs. 10 and 11.

When the mesial, incisal, and distal surfaces have been fractured, a type of restoration as shown in Fig. 12 serves admirably.[1]

There is one fundamental difference between a fractured tooth and one that has been destroyed through caries; namely, in the fractured tooth, because neither the tooth structure nor the dentine is carious, the dentine can often be used to advantage as a retentive factor (Figs. 13 and 14).

There are types of fractures that are unfortunate in that they occur in children when the root ends are not fully developed; at the same time they may be so deep that they endanger the vitality of the pulp because of the proximity of the fracture to the pulp. These children usually suffer considerable discomfort because of the exposure of the sensitive vital dentine. Even if all these complications exist, the best dental knowledge dictates the utmost effort for the preservation of pulp vitality, and in these cases I find it increasingly advantageous to proceed as follows:

(a) Since these teeth usually have considerable of the incisal part missing, it is possible to insert a temporary two-thirds shoulderless jacket crown (Fig. 15).

(b) The sensitive tooth structure precludes the possibility of any elaborate tooth preparation and my usual procedure is to take a copper band impression of the tooth as it is, as far toward the gingiva as the contour of the labial and palatal surfaces will permit.

(c) Then a shoulderless jacket crown is constructed, which ends somewhere in the gingival third of the tooth. Naturally, one must guard against placing this crown into traumatic occlusion, for otherwise it will become an orthodontic appliance.

These restorations need no tooth preparation; they will preserve tooth vitality; they are a nonconductor of thermal shock, in which respect they are far superior to gold and last long enough to allow complete tooth and root development, usually until the patient is 20 years old, and at that time the permanent jacket or veneer crown is made. The necessity for cavity sterilization and the use of a cavity lining which seals the dentinal tubuli before the impression is taken and before cementation cannot be overemphasized.

576 Fifth Avenue.

[1]Both, H. S.: The Porcelain Inlay. D. Items Int. 56:682 (September) 1934: A detailed construction of the porcelain pin incisal tip inlay, in which porcelain pins are used for additional retention.

HOW TO USE ARTIFICIAL DENTURES

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DENTISTS too often place a set of artificial teeth in a patient's mouth and dismiss him with the simple statement, "There you are, Mr. Smith; there are your new teeth; now it is up to you to learn to use them." But Mr. Smith doesn't know how to use them. It is the first set he has ever had. Without proper instruction he may never use them.

From the time the patient's teeth erupted until they were lost, the act of chewing, while really a voluntary action, became involuntary through habit. He has paid little or no attention to the way he chews. Most patients do not know whether they chew on one side or the other, or both. The natural teeth have been locked solidly in bone, and patients never have been required to know whether they use one side or both.

Suppose we are going to place twenty-eight teeth in the mouth, and instead of being locked in bone, as the natural teeth were, these teeth will simply rest on saddles. These saddles are movable, subject to movement by the tongue and cheeks, and before the new teeth can be used successfully, the patient must learn to keep these saddles firmly in place.

I have long felt that we dentists, as a group, have been giving patients considerably the better half of the bargain, and we have also been assuming a large share of the speculative half. Our half is backed up by years of study and countless repetitions of the construction process. We have not only taken full college courses, but we have also taken innumerable postgraduate courses, attended dental meetings by the score, and thrashed out minute construction details with the foremost men in the profession. Patients usually have no background of experience whatever to aid them, although our reputation as well as our invested time and money depend wholly on these amateurs being able to use what we make for them in a short time. Patients expect to go out immediately and eat a meal, paying little or no attention to the nature of the food selected for this first meal.

Many of us photograph our patients before they lose their natural teeth; we take study models; we match shades; we retain the extracted teeth, and in every way attempt to reproduce or improve on the previous facial expressions. After completing this preliminary survey, we struggle along with high and low lip lines, spherical occlusions, condyle registrations, gothic arch tracings, and innumerable other details—all of which call for the highest degree of skillful manipulation; then, without even asking that our work be paid for, we gamble, without one word of instruction, on the chance that a wholly inexperienced patient will learn to use the dentures quickly enough so that he will be satisfied. An automobile dealer would not turn a new, unpaid-for car over to a beginner for him to learn to drive without an instructor.

Instead of simply telling these denture patients to be careful how they chew, let us give them some definite information as to *how* to chew. We may not succeed entirely in teaching them to use dentures, but at least, we would not be leaving the result wholly to chance. We all know that no denture, however well constructed, is satisfactory to the patient, until he is able to use it, and almost any denture, however inaccurately constructed, is satisfactory if he is able to use it comfortably.

Balance

The ability of a patient to use dentures rests primarily in his being able to balance them. I like to stress this matter of balance. Often a denture is laid in the palm of the hand, or on the bracket table, and by applying pressure correctly, and incorrectly, attention is brought to the fact that it rests evenly on the application of correct pressure (Fig. 1) but tips as soon as incorrect pressure (Fig. 2) is brought to bear upon it. It will be noticed that in applying correct pressure, the finger is brought to bear (Fig. 1) on the lingual cusps, which, when set in their proper alinement, throws the weight *inside* the ridge and forces the denture firmly to place; whereas in (Fig. 2) the finger is applied to the buccal cusps, and with these being set buccally to the ridge, the pressure tends to pry the denture up and off its seat. It is well, at this time, to call the patient's attention to the fact that when he learns to keep the denture firmly seated, the only soreness he will experience will come from pressure; but if the denture moves around and out of its correct position, then he will be hurt not only from pressure, but also from the denture coming in contact with some high spot for which the pressure has not been equalized in the impression technique.

If there are any unusually high spots in the mouth, they should be pointed out, and it should be explained that relief has been provided for these places when the impression was taken and that this relief is of value only when the denture is resting firmly in its correct position. This brings to the patient's mind the necessity for learning to balance the dentures. It is surprising how much more seriously the patient views these instructions when it is pointed out that provision has been made for these high spots, but that the effort is of no value unless he learns to keep the

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Fig. 1—Denture resting evenly on the application of correct pressure.

Fig. 2—Denture moved off its seat by the incorrect application of pressure.

Figs. 3 and 4—Biting is a shearing action.

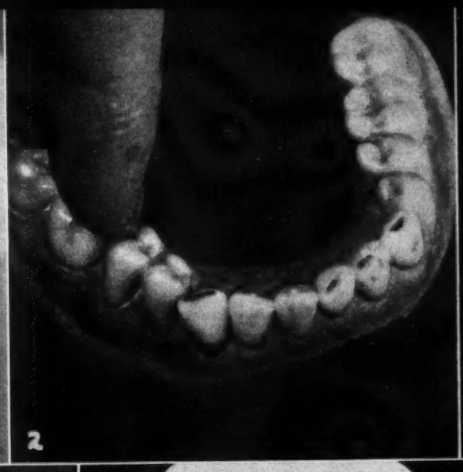
Fig. 5—Lower jaw dropped in first movement of shearing action of biting.

Fig. 6—Lower jaw thrust forward in second movement of shearing action.

Fig. 7—Lower jaw is drawn back past upper with food between to complete the shearing action.

Fig. 8—Lower first bicuspid comes forward until it is under the upper cuspid in the beginning of the biting-off process.

Figs. 9 and 10—The teeth travel backward as the biting-off process progresses until the first bicuspid finally comes to rest in its correct position when the teeth are locked in centric occlusion.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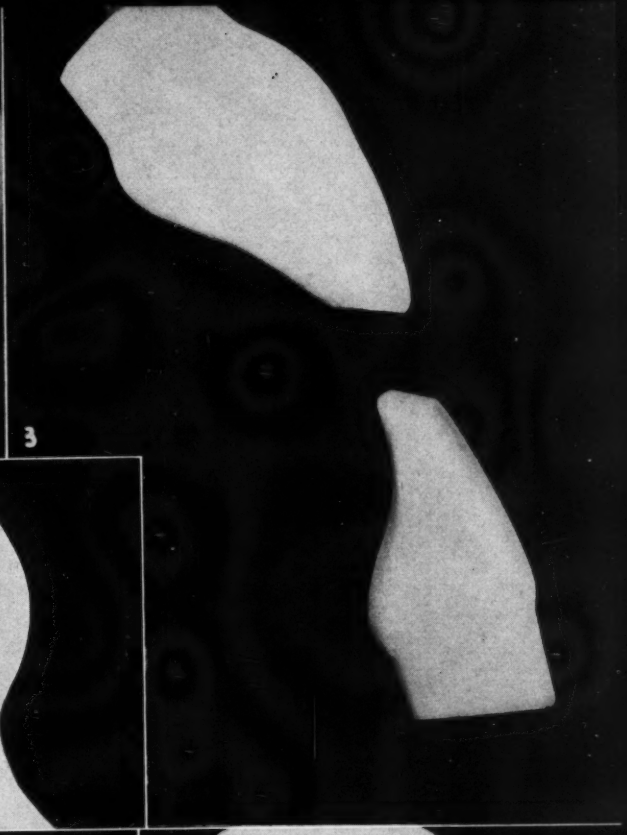
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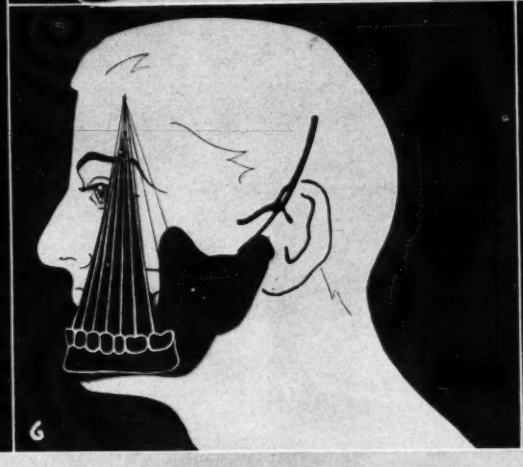
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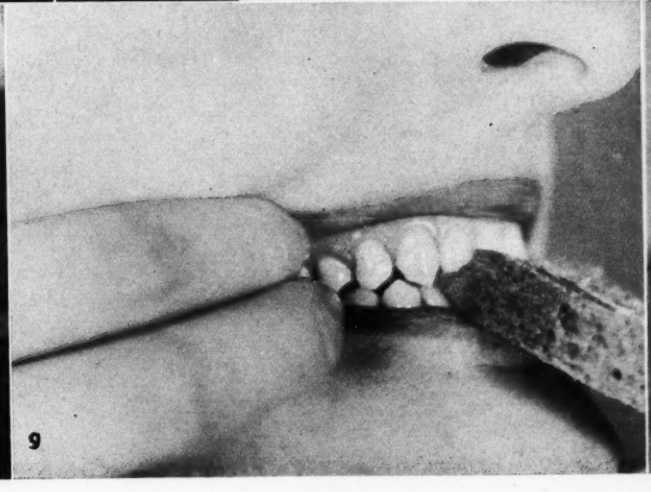
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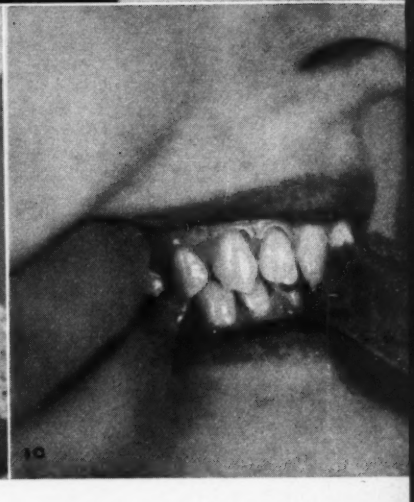
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dentures where they belong. This is particularly true of the lower denture.

The upper denture is merely a chopping block against which the lower works, in so far as its use is concerned. It should rest firmly against the superior maxillary bone, to be there at all times so that the lower can function against it. In order to keep the upper resting firmly in place, the patient must learn to bring the lower against the upper at such an angle that the resultant pressure will continually force it *backward* and *inward*. At *no* time should any *outward* or *forward* pressure be applied, as this tends to force the upper away from its seat and results in a broken seal and a loose denture. A little coaching at the time of insertion will show the patient the necessity for this movement, and will save many embarrassing moments later. The patient should be definitely shown that there are some things that he cannot do with artificial teeth if he expects them to function successfully.

Biting

Across the front of the denture there are placed cutting teeth (incisors); on each side are the grinders (molars). Probably the first step in the use of artificial teeth is to be able to bite food. Biting is a shearing action (Figs. 3 and 4). The lower jaw is dropped (Fig. 5); thrust forward (Fig. 6), then drawn back (Fig. 7) past the upper with the food between in such a way that this food is sheared off (Fig. 10). Note that in beginning the biting-off process, the lower first bicuspid comes forward (Fig. 8) until it is under the upper cuspid. (This position will vary with the size and toughness of the inserted food.) As the "bite off" progresses (Fig. 9) the teeth travel backward until this first bicuspid finally comes to rest in its correct position (Fig. 10). The teeth are now locked in centric occlusion, and are held there by the muscles of mastication.

The patient should never be allowed to drop the jaw open with a hinge motion (Fig. 11) as this allows him to get food between in such a way as to pry the upper down and the lower up. Note that the lines of force, which should pass through the upper toward the imaginary center are no longer parallel as in (Figs. 5, 6, and 7) but are thrown forward, and any pressure applied from this angle will dislodge both dentures.

If, for example, one is biting a sandwich, a piece of bread, or a piece of celery, the shearing off action may not be completed in one biting movement. It may be necessary to repeat this action or assist the shearing process by a forward thrust of the lips (Fig. 12) against the piece of food, or with a twisting, forward pull on the food (Fig. 13). If such action is necessary the teeth should be locked in centric occlusion (Fig. 10) and held firmly in that position by the muscles of mastication while the forward pull or push is being accomplished (Figs. 12 and 13). This prevents either denture from being displaced. Whenever the mandible is carried forward or outward, the teeth should not be in contact nor should there be anything between them that will tend to pry the upper down or the lower up.

Chewing

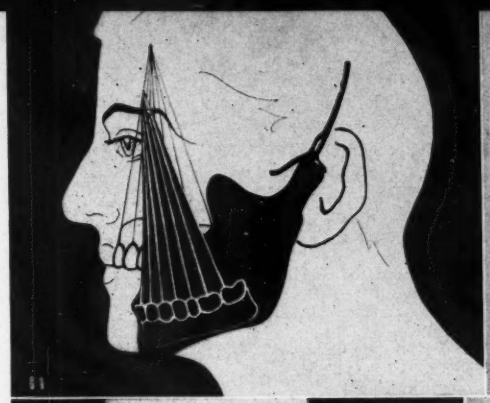
Chewing is a mortar and pestle action, particularly when anatomic posteriors are used. When teeth of this type have been articulated, there is a definite path through which they must travel in order to function with the greatest efficiency. They are so designed that each cusp has a sulcus through which to travel (Fig. 14). In order that the patient may pass these teeth across one another with the greatest efficiency, they must learn the "feel" of them. They must learn where this path is and follow it in the movement of mastication (Figs. 9, 10, and 11).

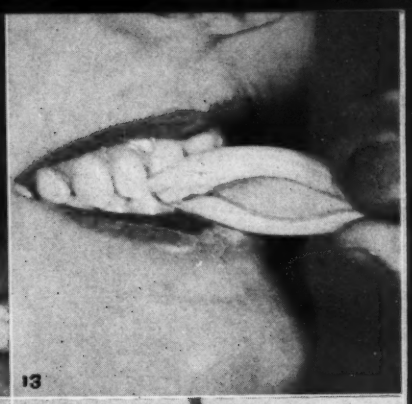
A great deal of this can be practiced without food in the mouth. It is important that the patient learn to know when the teeth are in the proper position, so that he does not become confused when food is taken. Patients should be made to go through these movements repeatedly; they should be stopped instantly if they attempt to push forward or outward with the teeth in contact. A muscle chart may help to show that they can apply more force by contracting the muscles of mastication, thus pulling the lower jaw toward the center, than they can by pushing sideways. It may be explained that when they start the chewing action from the side (Fig. 15) and work toward the center (Fig. 16), they not only take advantage of this greater force, but they also "seat" both dentures firmly during the process. If they deviate from the articulated path even half a tooth, cusps will cross cusps and simply mark grooves through the food without actually grinding it (Fig. 17). It is only when these cusps travel through their corresponding sulci, that their greatest efficiency is achieved, and this is the reason why patients should be definitely instructed that they must keep to these articulated paths in their chewing movements (Figs. 9, 10, 14, and 16).

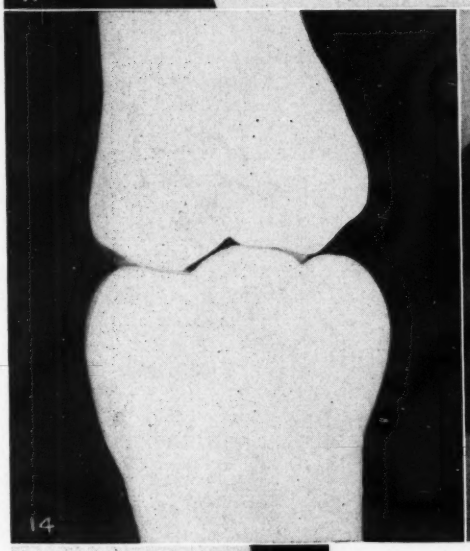
I like to consider the upper and lower dentures as each being two dentures fastened together in the center (Fig. 18), each made to fit the right and left superior and inferior maxillary bones. When the patient is working on the right side, he is using the right superior and inferior dentures; when he is working on the left side, he is using the left superior and inferior dentures. Owing to the necessity of holding food in place between the right or left dentures by means of the tongue and cheeks while working on these respective sides, it is only possible to chew on one side at a time. A study of the masticating movements will plainly show that the cheek works in from the side, while the tongue comes in from the center and holds the food in position, so that the lower denture may be drawn up through this trough by means of the muscles of mastication, and grind by the sliding action of the inferior denture against the superior. The proper movement is to start the chewing action from the side and work toward the center forcing the cusps through their respective sulci during the process. The tongue and cheeks then gather up the several morsels and force them back into position on the lower, and they are again moved from side to center against the upper.

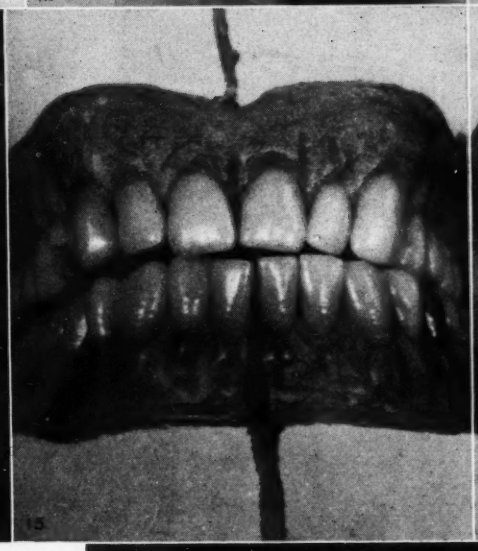
The patient should be instructed never to chew past center (Figs. 15 and 16). The action is *always* from side to center with the pressure applied only during this movement. If the patient wishes to work on the opposite side the action is simply reversed, but owing to the fact that it is impossible to split the tongue and hold food in position on the two sides at once, it seems reasonable to believe that the proper chewing function can be executed only on one side at a time.

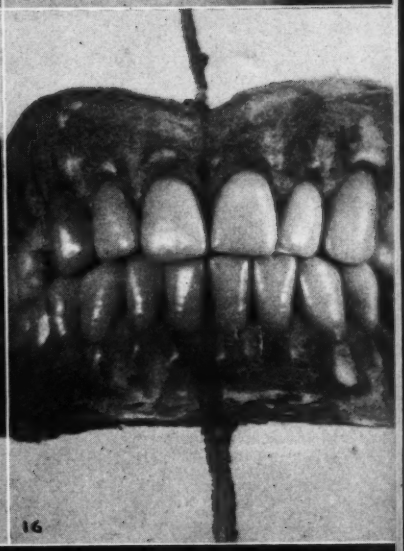
I often place a template on an articulated set to show the patient that teeth are not set up in a flat plane but are tilted to conform to the periphery of a sphere. This makes the chewing surfaces point toward a common center. I explain that by chewing backward and inward, as described, the teeth are always kept working toward that common center. This forces the upper continually backward, keeping it in constant con-

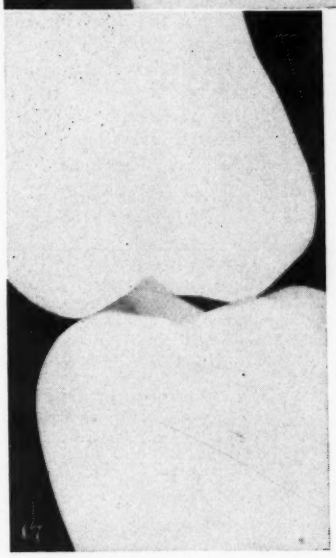


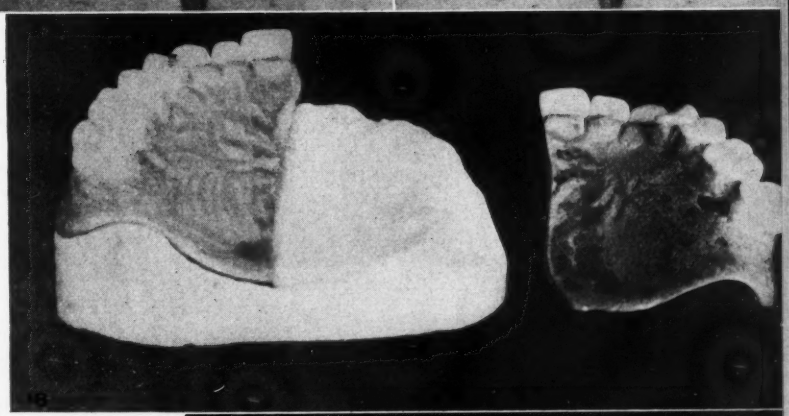












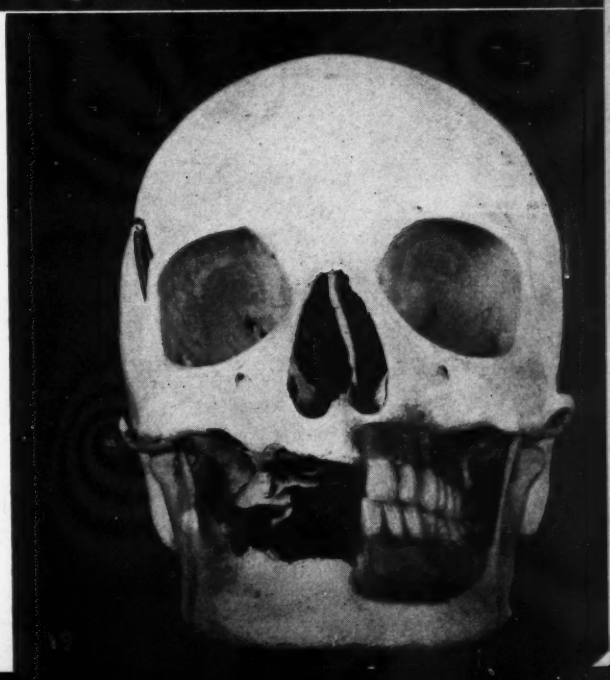


Fig. 11—Jaw dropped open in a hinge motion. This throws the lines of force forward, so that any application of pressure will dislodge both dentures.

Fig. 12 — Forward thrust of the lips against the food to assist shearing action.

Fig. 13 — Forward pull on food to assist shearing action.

Fig. 14—Anatomic posteriors designed so that each cusp has a sulcus through which to travel.

Fig. 15—Chewing action started from the side.

Fig. 16—Working toward the center in chewing action.

Fig. 17—In deviation from articulated path, cusps cross cusps and mark grooves through food without actually grinding it.

Figs. 18 and 19—The upper and lower dentures considered as each being two dentures fastened together in the center, each made to fit the right and left superior and inferior maxillary bones.

tact with the palate, and presses the lower downward and forward against its ridge, thus stabilizing both dentures. In order that the patient may more easily grasp the significance of this spherical orientation, it may be likened to the banking of a road curve, showing the advantages of a banked curve over a flat curve.

NONANATOMIC POSTERIOR TOOTH FORMS*

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THERE are readily obtainable at the present time several types of nonanatomic posterior tooth forms for use in denture construction. If the operator is convinced that nonanatomic teeth are his choice over the conventional posterior tooth forms, there still remains the question of which type of nonanatomic form to employ. It is the purpose of this article to make suggestions for selecting the tooth best fitted to the case.

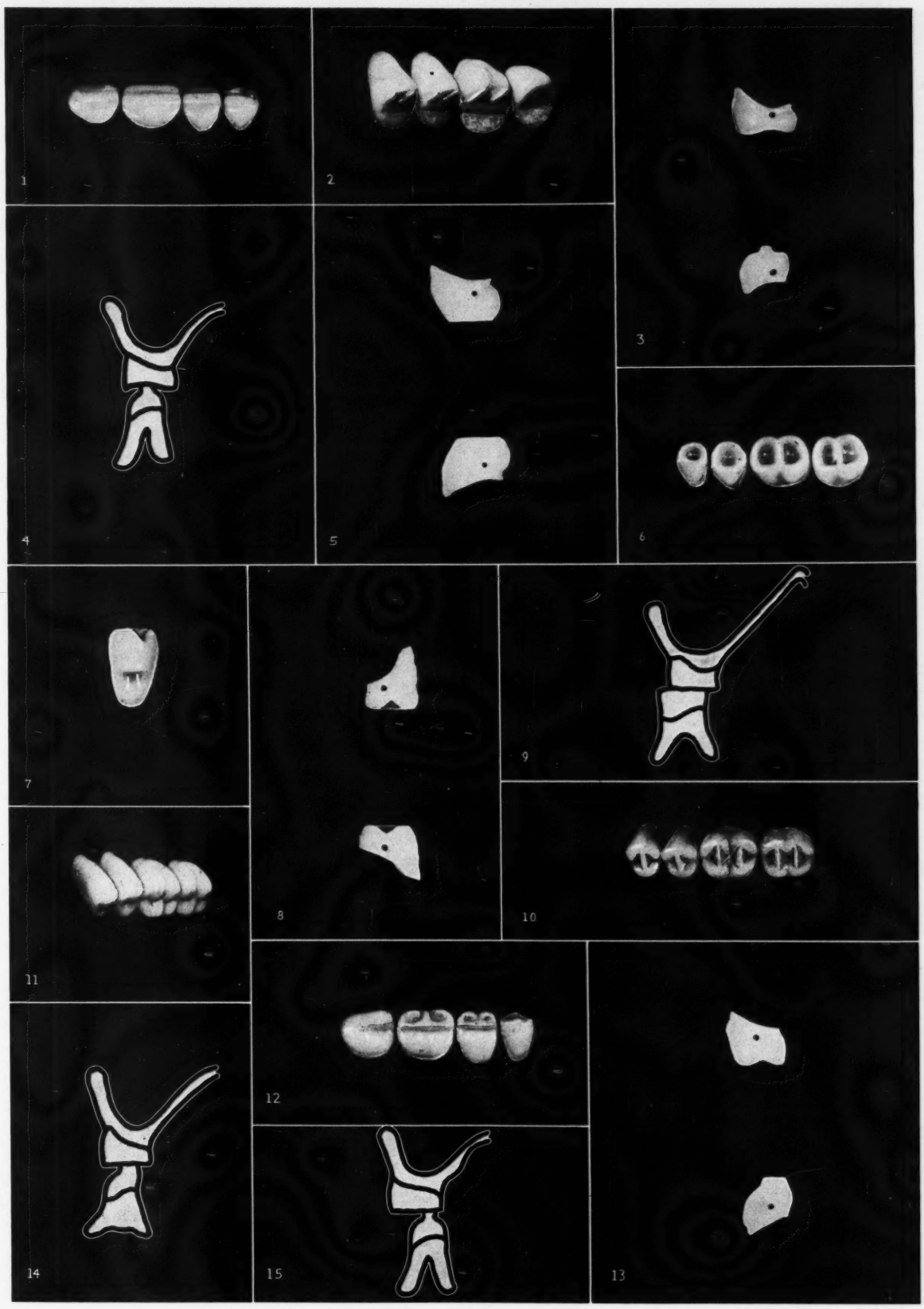
There are four tooth forms readily available which I will name in order of their introduction to the profession: (1) Sears Channel Tooth; (2) Hall Inverted Cusp Tooth; (3) Trucusp Posteriors (Doctor S. Myerson), and (4) French's Posteriors.

1. The Sears Channel Tooth, designed by Doctor Victor Sears, who, by the way, deserves credit as a pioneer in this field, has for its lower members, teeth that are extremely narrow bucco-lingually. The anterior portion of the first bicuspid is conventional in form but its distal portion is nonanatomic. The second bicuspid and first molar (the teeth that bear the brunt of masticating stress) are designed with an occlusal surface, the working portion of which is a flat porcelain block about 2 mm. wide running mesio-distally the entire length of the tooth. This plane, which is raised above the general occlusal level about half a millimeter, is the only portion of the lower tooth which makes contact with the upper. On the second molar the elevated plane is obliterated in the occlusal level as it approaches the distal, because this tooth was evidently designed to help in arranging for balance in protrusive and lateral movement. Second molars generally lie out of the area of greatest efficiency for chewing, and their most useful function is as a rule the help gained by their use as balancers (Fig. 1). The upper teeth present an appearance from the buccal surface which is approximately that of conventional teeth. The occlusal surface, however, consists of a flat plane approximately 2 mm. in width running down the center of the tooth from mesial to distal. From this central fossa, a plane with an inclination of about 10 degrees from the horizontal falls away to the lingual wall of the tooth; similarly, a plane of the same inclination falls away to the buccal wall of the tooth. The buccal plane is provided with small triangular elevations which were designed to help in grinding food. The narrow occlusal working surface on the lower tooth makes contact in centric relation of the dentures with the narrow flat plane of the upper (Fig. 2). I have heard comment from dentists that these teeth have only a chopping effect on food and do not grind efficiently because of the narrow working surface provided by the lower tooth. This complaint has never been expressed to me by the person wearing them, however, and I am inclined to discount it considerably. I have used these teeth in cases with narrow sharp lower ridges with especially good results, inasmuch as such ridges do not tolerate wide occlusal surfaces well. The narrow working surface of the lower Sears tooth is as much as these ridges can tolerate, and I believe this tooth helps solve the problem of the knife-like lower ridge (Figs. 3 and 4).

2. The Hall inverted cusp tooth presents in both upper and lower, an occlusal surface which viewed from the buccal, lingual, mesial, or distal is perfectly flat (Fig. 5). The porcelain of the occlusal surface is, however, scooped out, so that the bicuspid working surface is a single round-bottomed fossa encircled by a narrow porcelain rim. In the molars two fossae are seen, so that in addition to the thin porcelain walls which make the outer borders there is also a central cutting surface running bucco-lingually. In function, these thin porcelain walls serve to cut and grind food (Fig. 6). The fossae are provided with no escapement grooves, as are the fossae of conventional teeth, and are deep compared to the conventional fossae. This results, some operators report, in food jamming into these areas and being retained as there is no means of escape; of course, this is detrimental to the efficiency of the teeth. The fossae are highly glazed, however, and I have not experienced any great difficulty or heard many complaints from patients in this regard. A prosthodontist of my acquaintance, who has used these teeth since their introduction, reports that where such clogging occurs he "frees" the fossae by cutting a notch in the porcelain, well down to the floor of the fossae. This break in the porcelain wall of the tooth acts as a sluiceway and helps prevent food packing. The opening is made on the bicuspids at the disto-lingual wall; on molars, where there are two fossae, one opening is made in the mesio-lingual and one in the disto-lingual wall (Fig. 7). The Hall teeth do not present a natural-looking buccal surface; when I employ them I substitute for the first bicuspids, both upper and lower, conventional teeth which I alter occlusally to harmonize with the flat occlusal plane of the Hall teeth. The fact that these teeth can be set in cross-bite seems to me a distinct advantage and I have so employed them with apparent success. These teeth are best employed on

*Since this article was written the 20° Trubyte tooth has been introduced to the profession. I have not yet used these teeth and so cannot properly comment except to say that the narrow bucco-lingual dimension of the lower teeth appeals to me as a good feature. It would seem also that some of the other modifications in their design would work out to practical advantage. Time and experience will assign this tooth as it has others to its proper place in our armamentariums.

Fig. 1—Sears Channel lowers. The narrow porcelain block which is raised above the general occlusal level is the only part that functions in mastication.
Fig. 2—Sears upper teeth with flat central fossa.
Fig. 3—Sears teeth viewed from the mesial.
Fig. 4—Set-up of Sears teeth showing narrow lower with occluding block of lower in contact with mesial sulcus of upper.
Fig. 5—Hall's inverted cusp tooth. Mesial view shows flat occlusal surfaces of both upper and lower.
Fig. 6—Occlusal view of Hall's teeth. The occlusal aspect of upper and lower is the same.
Fig. 7—Cut made in disto-lingual wall of the Hall bicuspid to provide escapement for food to prevent jamming.
Fig. 8—Trucusp teeth viewed from the mesial showing sluiceway for food escapement, and food cutters running bucco-lingually.
Fig. 9—Trucusp or Hall teeth cross-bite relation, a set-up often desirable where the upper arch is narrower than the lower.
Fig. 10—Occlusal view of Trucusp teeth. This is the most natural appearing of the nonanatomic posterior teeth.
Fig. 11—French's upper teeth, bucco-occlusal view.
Fig. 12—French's lower teeth, showing the shallow cups on the working portion of the occlusal surface.
Fig. 13—Mesial view of French's teeth. On



the lower the load falls entirely on the lingual half of the occlusal surface, the buccal being cut down so that there is no occlusal contact.

Fig. 14—Narrow lower tooth employed on a flat lower ridge. The buccal tissue and the tongue help retain a denture which is so designed.

Fig. 15—Sears lower tooth occluding with a Trucusp upper. The flat upper tooth allows the lower tooth to be set in a position most likely to result in stability of the denture bases. French's lower may be similarly employed against a flat upper, such as the Trucusp or Hall tooth.

ridges which are well defined at least on the lower.

3. The Trucusp teeth present a buccal surface which, while not as natural looking as might be desired, can easily be altered where necessary to produce a good esthetic result. This tooth has a flat occlusal surface (Fig. 8); hence it can be set up in cross-bite relation where necessary. It may be observed that a large percentage of cases call for cross-bite relation to secure the maximum stability of the dentures (Fig. 9). The occlusal surface of both upper and lower teeth present fossae which are of conventional depth and which are provided with escapement grooves. On both the bicuspids and molars there are transverse "cutters" designed to chop and grind food. These teeth look the most like conventional teeth of any available (Fig. 10). The matter of occlusal appearance of some mechanical forms is one that seems to bother some patients considerably, although its importance is purely psychologic. The occlusal anatomy of these teeth will not be questioned by patients. I often use these for upper teeth in combination with the French's lowers, a point discussed later in this article.

4. French's upper posteriors, are not unlike many of the molds of teeth seen before the anatomic carvings came into use. Viewed from the buccal surface their appearance is only fair and could be materially improved. Their occlusal aspect reveals shallow cusps which fall away at an obtuse angle from the buccal and lingual walls to a sulcus running mesio-distally (Fig. 11). The lower tooth is narrow bucco-lingually, and that part of the occlusal surface which functions in mastication is a platform about 4 mm. in width occupying the space tenanted by the lingual cusps in the anatomic type of tooth. That portion of the tooth normally occupied by the buccal cusps is cut down, so that it is entirely out of occlusion. This platform area is not entirely flat but is indented in the second bicuspid and first molar with extremely shallow cups. The first bicuspid is of approximately conventional design which helps in the appearance of the set-up. The second molar is apparently designed to act as a balancing tooth and is about the same as the Sears second molar, the food platform being present only in the anterior portion of the tooth, and is not cupped as are the bicuspid and molar (Fig. 12). The design of the French lower teeth is such that when properly arranged the stress of mastication falls within the crest of the lower ridge. This is an extremely important point and one that gives the French lower tooth a material advantage over some other tooth designs. The narrowness of the entire tooth bucco-lingually is another point of design that is important in arranging teeth on a narrow ridge (Fig. 13).

Prosthodontists often encounter problems in the construction of lower dentures which are extremely difficult to solve, and the problem of the flat and narrow lower ridge is one of the hardest with which to deal. In taking the impression, if the operator still finds the area seriously restricted after he has included all the tissue that will tolerate a denture base, it is folly to employ a tooth that is of normal width bucco-lingually. In such cases, it is an immense help to have teeth designed in the manner of French's lowers. These teeth enable an operator to make a lower denture that will, I believe, give the maximum efficiency in such cases. It is extremely difficult to construct lower dentures that are retained by "suction" as are upper dentures. In those cases that do exhibit suction when first constructed, this often seems to disappear in a lower denture as absorption takes place and the peripheral seal is lost. By using a tooth of narrow buccal-lingual design, it is possible to utilize other forces to help stabilize a denture. Fig. 14 shows a cross section of a lower denture with a narrow lower tooth. The border of the denture having been carried to the limits of tissue tolerance, the buccal tissues tend to collapse against the concavity provided in the base material and help retain the denture in place. On the lingual side the tongue lies against a surface which is so designed that the pressure of the tongue tends to seat rather than dislodge the denture. A tooth of normal width employed on a ridge of this type would overhang the tongue and create a surface that would be easily lifted by tongue movements. In employing narrow lower teeth, I have often used a Sears' or French's lower in opposition to a Trucusp upper with good results, for the following reason: Sears' or French's upper teeth, because they each have a buccal and lingual plane of inclination, require a certain definite relationship of the lower to the upper teeth bucco-lingually. The Trucusp tooth, because it has a flat occlusal surface viewed bucco-lingually, allows a certain latitude of lower to upper relationship which is often an advantage in arranging teeth (Fig. 15). When French teeth are so employed against a Trucusp upper, when spot grinding to correct errors that may have occurred in vulcanizing, I try to do the grinding on the lower teeth. I proceed in this way in order that the sharp cutters of the upper teeth will not be impaired and will perform the masticatory function as efficiently as possible. The lower teeth have little occlusal carving; even if the little that remains is ground away in adjusting the occlusion, the sharp ridges of the upper teeth can chop and cut against the porcelain plane of the lower with good effect.

Conclusion

All the teeth described here have this factor in common; they all allow freedom of anterior-posterior movement without cuspal interference. The theory behind this point is that if the centric relationship of the dentures change owing to tissue resorption, the dentures can and will assume the new position, because they are without cuspal interference. This theory, I believe, works in practice.

The tooth forms here described will give satisfaction when intelligently used. The note of warning that may well be sounded in using all types is this: It should not be assumed that because these teeth eliminate cuspal interference that short-cut methods of denture construction may be used with good results. No deviation from proper techniques can be compensated for by a new tooth design; sloppy impressions, inaccurate bites, and faulty tooth arrangement never have and never will produce good artificial dentures.

2 East Fifty-Fourth Street.

TYPES OF HEMORRHAGE AND METHODS OF CONTROL

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THE dentist and oral surgeon should be able to determine the etiology and source of bleeding exactly. It is at all times advisable to make a careful inquiry concerning bleeding tendencies, however minor the prospective operation may seem. I believe it is good practice for every dental surgeon to familiarize himself with the technique of blood pressure and the Talquist or Dare test for hemoglobin estimate; also, the management of bleeding time and coagulation tests. Certainly, hemanalysis ought to be a prerequisite to graduation of dental students. The potential dangers in dentosurgical practice are too often proved in the countless insidious cases of agranulocytosis, the aplastic anemias, scurvy, and hemophilia, for example. Many fatal cases of bleeding following exodontia in the emergency service of hospitals point to the ignorance or unpreparedness of the dentist and frequently to failure on the part of patients to give complete histories.

Primary hemorrhage due to dentosurgical intervention is rarely alarming, for the skeletal base of most of the field favors arrest. Compression in one form or another under careful technique is adequate. When the ordinary gauze pack fails, the modeling compound block to be described here is invariably successful. On the other hand, secondary hemorrhage, whether postoperative or a sequel of systemic nature, such as in certain blood dyscrasias, extreme hypertension, intercurrent disease, or as a result of a congenital stigma, often warrants alarm and the dental practitioner must, therefore, have an intelligent grasp of its rational management.

Technique for Modeling Compound Block for Bleeding

1. A mass of compound, sufficient to cover well beyond the area of the wound and including the articulation is molded into position while partly soft, somewhat as in taking a bite.

2. The mass is then cooled, removed, dried, and painted with melted stick compound on the surface covering the wound.

3. The compound mass is then quickly carried to place; the compound is patted with moistened fingers against and beyond the bleeding area while an assistant directs a stream of ice water.

4. A four-tail or six-tail bandage is then applied to hold the pack in place.

5. In nonbleeders from six to twenty-four hours will be found sufficiently long for the retention of the modeling compound block.

6. The most important factor of the modeling compound block is its sealing property.

Report of Cases

Out of eight cases of granulocytopenia seen by me, two patients had teeth removed shortly before admission to the hospital. These cases were followed by law suits despite our explanations of the terminal nature of the disease. One hemophiliac boasted of having had a root extracted without informing the dentist of his condition and later had to spend nine weeks in a hospital.

Case 1—A man, aged 45 (the fourth member of a family of hemophiliacs), who gave a typical history of hemophilia underwent an operation. It was our intention to administer ovarian extract as an added safeguard, but owing to the patient's normal coagulation and bleeding time at admission, this was not done. Despite the age of the patient and the negative coagulation finding at operation, the patient subsequently bled profusely.

Treatment—Autotransfusion and four donor transfusions during the following three weeks proved futile. Therapeutic injections likewise failed. Pressure and sealing with modeling compound proved efficacious, but only for intervals of from four to nine hours.

Comment—This is characteristic in patients with a history of hemophilia. The period of arrest can be hours or days, but at best, bleeding management is difficult. The slightest retraction of the tissue underneath the compound block is followed by persistent capillary oozing which requires readjustment of the modeling compound.

Course—On the third day in the hospital, I found the patient feeble, exsanguinated, with the red cell and hemoglobin count markedly low. It was believed that sealing without pressure might prove more successful; therefore, the following simple remedy was instituted:

Final Treatment—A strip of gauze saturated in collodion was laid over the bleeding part, and was held in place for a few minutes, after which the entire area was painted with more collodion. Bleeding ceased at once and did not recur. The patient remained under observation for one week when he was discharged.

Case 2—A man, aged 36, who had polycythemia presented for extraction.

Examination—The patient's mouth was septic and malodorous; decayed, abscessed teeth and pyorrhea were present. There was a history of prolonged and dangerous postextraction bleeding; as an added handicap, the patient had a congenital heart disorder of a rather serious nature. Unlike the usual beefy redness of the skin in polycythemia, this patient was cyanotic.

Preextraction Treatment—Because the patient refused hospitalization, he was placed in the care of his physician for two weeks of preoperative medication. During this period, calcium gluconate and horse serum were used freely. The coagulation and bleeding time at operation was found to be only slightly prolonged.

Postoperative Course and Treatment—Following two extractions the patient bled profusely. Repeated changes of the modeling compound pack were required for about two weeks and the physician was in almost constant attendance. Fortunately, the patient recovered.

Because this was a borderline case the subsequent extractions were carried out by "open" operations in which sufficient bone was removed in the molar regions to permit complete closure by overlapping the flaps. The areas operated on in each case were then occluded with modeling compound blocks which were held in place for several days. There was no further postoperative bleeding.

Case 3—A man, aged 36, came into the hospital bleeding from a maxillary wound. He had had oral surgery performed about a week before, and a moderate erythrocytopenia

(a diminution in the blood platelets) was the only significant clue in this case. Transfusions did not help and for two days various forms of pressure were used. Because the patient was edentulous, I recommended the insertion of a modeling compound baseplate over the entire maxilla which was carried out by his physician who had had dental experience. When this procedure failed, the use of pressure was abandoned in favor of collodion dressings which proved successful.

COMMENTS AND SUGGESTIONS

1. Dentosurgical patients presenting with marked disparities in the blood picture require hospitalization and when possible they should have the supervision of a competent hematologist.

2. In all cases of patients with blood conditions that range from fair to normal the injury should be located and blocked by pressure if it is overlying bone; if the injury is in soft tissue, suturing with an onlay of collodion should be done. Cauterization and thromboplastin are useful agents but except in mild cases, they are less potent.

3. Surface cuts causing delay during routine dentistry may be arrested by painting with collodion after steady pressure for a minute or two.

4. Severe postoperative bleeding in those patients with normal qualitative hemanalysis should be a matter for operation, not speculation. Here, modeling compound sealing is successful.

The disheartening problems that arise in the management of mouth bleeding in patients with the purpuras, lukemias, and the many borderline complications from an impaired hematopoetic system are too frequently beyond solution. All that can be done is to stop the leak. Inasmuch as no set method will produce the same response in all cases, resourcefulness is necessary, and a hospital is the safest place for the patient.

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ABOUT OUR CONTRIBUTORS

JOHN B. LADUE, D.D.S. (University of Illinois College of Dentistry, 1905) has been a frequent contributor to the dental literature and has given clinics and presented papers on important programs throughout the country. Doctor LaDue taught at the University of Illinois from 1920 to 1924, and has had extensive postgraduate teaching experience. He is a member of the A.D.A. and the National Society of Denture Prosthetists, and is the president-elect of the Chicago Dental Society. Doctor LaDue specializes in full denture construction.

H. SPALDING BOTH, D.D.S. (New York College of Dentistry, 1909) has previously contributed to the dental literature and he is the author of a three-reel standard size motion picture, ACTUAL PREPARATION OF A VITAL TOOTH FOR A JACKET CROWN. Doctor Both is a member of the A.D.A., the New York State Dental Society and First District Dental Society, and Fellow, New York Academy of Dentistry. Doctor Both has a general practice.

CARL JEROME GRAVER, D.D.S. (Ohio State University College of Dentistry, 1928) published an article in the June, 1935, issue of this magazine on BRIDGE REPAIR TECHNIQUE.

HAROLD O. BROWN, D.D.S. (University of Buffalo School of Dentistry, 1913) wrote a two-installment article for THE DIGEST in September and October, 1932, on THE ESTHETICS OF FACIAL RESTORATION. Doctor Brown is also the author of a book, USE AND CARE OF DENTURES (Sheffield-Fisher, 1931). He is a member of the A.D.A. and component societies and the Rochester Dental Society Study Club.

IRVING R. HARDY, D.M.D. (Tufts College Dental School, 1917) is known to DIGEST readers as the author of MINERAL STAINS IN THE CONSTRUCTION OF DENTURES, November, 1933; and IMMEDIATE MAXILLARY DENTURES, February, 1935.

BERTRAM B. MACHAT, D.D.S. (Columbia University, School of Dental and Oral Surgery, 1905) has been a frequent contributor to the dental literature, chiefly on the subjects of oral diagnosis, dental medicine, oral surgery, and hospital practice. Doctor Machat was the founder and chief of the staff department of Oral Surgery, Greenpoint Hospital, from 1918 to 1931 and has since been consultant; he is an attending dentist in the department of Dental-Oral Surgery at the Jewish Hospital, and chief of the Dental-Oral Surgery department at the Jewish Sanatorium for Chronic Diseases, Brooklyn. Doctor Machat has a general practice and is a member of the American Dental Association.

The Editor's Page

IN January, 1932, the first issue of the new DENTAL DIGEST was published. At that time we announced that we would publish at intervals illustrated material to "explain and interpret dentistry to the public." During 1932, we published three illustrated articles particularly directed to children. (THE CAVE PEOPLE, February; THE TWINS, March, both by Elma J. Miller; GRANDFATHER MOLAR, July, by Lon W. Morrey.)

In February, 1933, a chart was published called DENTAL CONDITIONS which was suggested and developed from copy submitted by Samuel D. Harris, D.D.S. of Detroit, Michigan. This chart initiated the feature known as THE EDUCATION OF THE DENTAL PATIENT, the first and second series of which have been bound in booklet form to meet the repeated requests of dentists for this convenience More than 15,000 of these booklets have been distributed to date. The enthusiastic reception of this type of material is proof of its efficacy. Robert Herrick, the Elizabethan poet, expressed the idea behind our policy of visual teaching: "We credit most our sight; one eye doth please our trust far more than ten ear-witnesses." Nevertheless, the advantages to be gained from educating the patient in the dental office do not seem to some to be sufficient. The cry is heard in many quarters that some other means of educating the public to the value of dentistry must be found.

Those who believe that the technique of modern merchandising can be used to further the acceptance of dental services are not always familiar with some of the underlying principles of advertising. A tangible, single-purpose object of standardized form and definite function is easy to advertise with a reasonable assurance of being understood. Such an object can be directed to people classified by age, education, and occupational interests. The medium for advertising is then selected and it is expected to reach a particular class. It would, for example, be absurd to advertise automobiles in children's magazines or typewriters and adding machines in farm papers.

Dentistry is not a single-purpose, single-function activity. It is directed to all age groups, all types of educational background, and all economic levels. Immediately in a discussion of dental publicity, therefore, an argument arises as to the type of medium that might be used, and, in turn, there develops competition among those with particular interests within the profession: the orthodontist, the pediodontist, the prosthodontist, and so on.

At the present time, the more or less unorganized attempts at dental education of the public are to be found in the appeal to school children by presenting health playlets, magic shows, and puppet shows. The material that appears in newspapers and magazines is occasionally of an excellent character. An example of this is a story about orthodontia that recently appeared in *Good Housekeeping Magazine.*[1] Generally speaking, health columnists who give lip service to dentistry have neither the time, space, nor information to give sound and adequate dental advice.

The radio has also been used by dental societies but on the time contributed to it by the stations, which is, naturally, a time at which listener interest is likely to be low. Moreover, the mere presentation of dreary facts and sterile statistics is probably entirely ineffective. The American Medical Association has recently recognized this fact and is now sponsoring a dramatized program with incidental music under the title, YOUR HEALTH. This program has some continuity, has qualities of listener appeal, and is intended to impress the radio audience with the fact "that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the peo-

[1]Coryell, Hubert B.: New Mouths for Old, **Good Housekeeping**, October, 1935, page 214.

ple." This represents educational publicity in the right direction. It is sponsored and completely controlled by a professional organization.

Because the present activities to educate the public concerning dental health are sporadic and haphazard, it does not follow that the American Dental Association should be stampeded into an ill-conceived publicity campaign. Some form of public education is, of course, desirable; but control must constantly be exercised to keep such educational material within the bounds of factual information and professional propriety.

The best educational opportunity still exists in the vigorous training of the patients whom we are now serving in our offices. The dental profession can in a measure determine its opportunities. On the one hand, there are the uncertain and nebulous results to be sought through widespread and impersonal advertising; on the other hand, there is the immediate and gratifying experience to be had in knowing that the patient in the chair has grasped the significance of the service the dentist is giving him.

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*Originally published as a chart in the Second Series.

THE USE OF THE SALIVA EJECTOR TO WITHDRAW CONTENTS OF ROOT CANAL

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Cleveland

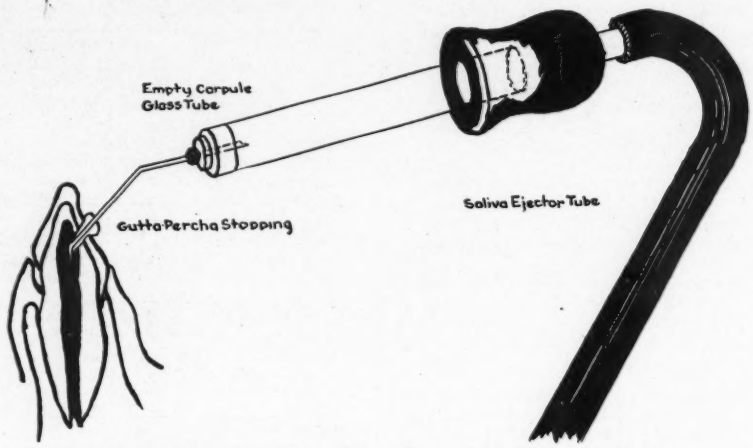
EVERY dentist concerned with the problem of saving teeth exposed by decay will be interested in the following simple, effective way of withdrawing all blood, serum, or pus from the root canal.

EQUIPMENT

The necessary equipment consists of a hypodermic needle of the type used with carpules. An empty glass carpule tube from which the rubber stopper and plunger have been removed is sterilized along with the needle.

TECHNIQUE

1. The pulp of the tooth is removed with the proper broach.
2. The hypodermic needle is inserted into the rubber carpule stopper and this is reinserted into a free end of the glass carpule.



3. The glass is then fitted into the saliva ejector tube and the needle is placed into the open root canal.
4. When the force of the saliva ejector is turned on, the contents of the root canal are sucked out.
5. Care must be taken, however, to plug with gutta-percha any opening into the canal not occupied by the needle.

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SUGGESTIONS TO CONTRIBUTORS

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ILLUSTRATIONS: Drawings and photographs should be plainly numbered on the backs according to the sequence in which reference is made to them in the article. The author's name should be written on the back of each illustration, and in case of possible doubt, the word "Top" to designate the top of the illustration. In the case of roentgenograms, the negatives are preferred for reproduction; in the case of photographs, glossy prints about 12 by 8 inches in size. Line drawings should be made in black on white paper that does not blot. Color work must be of a particularly high quality to be acceptable. All illustrations should be clear and distinct and large enough so that details will not be lost if reduction in size is necessary.

EDITING: Authors should not feel that they are being discriminated against or personally criticized when changes are made in the wording or spelling of their manuscripts or if parts are deleted. A minimum of editing is necessary in all cases—if for no other reason than to make grammatical corrections, and sometimes one article will require more revision than another. The reason for this is obvious. Every magazine has its peculiar style in matters of arbitrary spelling, in its general tone, in its form of presentation. The DIGEST favors a compact, terse, simple style, with outlining wherever possible, and many illustrations. Wordy, padded articles, with extraneous and irrelevant matter and florid writing will necessarily undergo considerable editing to make them conform to our style of succinct, *purposeful* writing. It is, however, at all times the aim of the editors to preserve the author's meaning and to help him make that meaning clear; the editing is not done for standardization as such.

ANONYMITY: Anonymous manuscripts and communications will not be read.